LOGGED BY	BEGIN DATE	COMPLETION DATE	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID
T. Carroll	2-18-08	2-19-08	N2120366.979 / E5994998.299 (NAD83)	BTNB-R4-PZ
DRILLING CONTRACTOR			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
Gregg Drilling and Testing, Inc.			Offset 100ft R Sta 76+22 NB Alignment	70.422 ft (NAVD88)
DRILLING METHOD			DRILL RIG	BOREHOLE DIAMETER
Mud Rotary			Fraste Multi-drill (track)	5 in. (soil); 4 in. (rock)
SAMPLER TYPE(S) AND SIZE(S) (ID)			SPT HAMMER TYPE	HAMMER EFFICIENCY, ERi
MC (2.4"), SPT (1.4"), HQ Core			Automatic, 140 lbs., 30-inch drop	72.9%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER READINGS DURING DRILLING AFTER DRILLING (DATE)	TOTAL DEPTH OF BORING
2" dia. Standpipe Piezo Screened 49.5 to 69.5 ft				124 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	0		CLAYEY GRAVEL (GC), reddish brown, moderately compacted, gravel is fine, angular, with fine to coarse sand, with black organic mottling - dry to moist. [FILL]												
68.42	2														
	3		2.5', piece of plastic.		S1	17 9 8	17	100							
66.42	4		SANDY ORGANIC SOIL (OL), soft to medium stiff, with fine SAND, very dark brown, moist, with decayed vegetation up to 1.5" diameter, slight organic odor detected. [BURIED SOIL HORIZON]		S2	4 8 13	21	83							
	5														
64.42	6		SILT with SAND (ML), medium stiff, yellowish brown, dry to moist, with light yellowish brown mottling and black specks, strongly cemented, with piece of decayed vegetation. [COLMA FORMATION]												
	7														
62.42	8		Grades without decayed vegetation.		S3	19 22 31	53	100							
	9		Grades with iron-oxide staining, increase in SAND content, dense.							13.7	130.7				PI, PA, LL
					S4	12 17 22	39	67							
60.42	10														
	11														
58.42	12														
	13		Grades to SANDY SILT, yellowish to reddish brown, dry to moist, SAND is fine, with light yellowish brown mottling, with black specks. [COLMA SAND]		S5	12 23 29	52	72		14.1	136.8				PA
56.42	14				S6	10 15 19	34	67							
	15		Grades with pockets of SANDY CLAY.												
54.42	16														
	17														
52.42	18		Poorly graded SAND (SP), dense, fine, reddish brown, moist, trace fines. [COLMA SAND] Black carbon nodule up to 1/4" diameter.		S7	19 32 49	81	83							
	19														
			Grades dark yellowish brown.		S8	14 19 25	44	83							
50.42	20														
	21														
48.42	22														
	23		Poorly graded SAND with CLAY (SP-SC), very dense, reddish brown, moist, fine.		S9	27 47 50/ 5.5"	97/ 11.5"	86		19.5	131.9	DS = 1.32			PA
46.42	24		Grades yellowish brown.		S10		48	100		19.4 18.8	129 127	DS =			
	25														

(continued)

Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	25		Poorly graded SAND with CLAY (SP-SC), very dense, reddish brown, moist, fine.			16 23 25						1.668 DS = 2.01			
44.42	26														
	27														
42.42	28		Grades reddish brown with yellowish brown layer, with occasional black specks.		S11	18 33 43	76	89							
	29														
40.42	30		Grades yellowish brown, very dense.		S12	17 23 30	53	83							
	31														
38.42	32														
	33		Grades fine to medium, with frequent pockets of slight cementation, with occasional black specks and iron-oxide staining.		S13	20 27 31	58	83		20.1	132.9				PA
36.42	34				S14	17 23 33	56	83							
	35														
34.42	36														
	37														
32.42	38		Grades without black specks, without iron-oxide staining. SAND grades fine.		S15	21 27 36	63	94							
	39				S16	11 22 31	53	67							
30.42	40														
	41														
28.42	42														
	43		Grades dense, dark yellowish brown and light yellowish brown, with pockets of slight cementation, trace fines, SAND grades fine to medium.		S17	30 43 50/ 5.5"	93/ 11.5"	86							
26.42	44				S18	11 19 16	35	100							Appears to be a water bearing layer at 44'
	45		45.0', grades clayey.												
24.42	46		Poorly graded SAND with CLAY (SP-SC), dense, fine, yellowish brown, moist, horizontally laminated, with iron-oxide mottling.												
	47														
22.42	48		Poorly graded SAND (SP), medium dense, fine to medium, dark yellowish brown, wet, with iron-oxide mottling, with crushable black carbon nodules.		S19	15 22 34	56	83		21.2	134.2				PA
	49														
			Poorly graded SAND with CLAY (SP-SC), dense, fine to very fine, dark yellowish brown, moist, with iron-oxide mottling.		S20	11 11 21	32	100							
20.42	50														
	51														
18.42	52														
	53		Lean CLAY with SAND (CL), very stiff, grayish and yellowish brown, moist, pockets of cemented SAND up to 1/8" diameter, occasional piece of angular fine GRAVEL. [RESIDUAL SOIL]		S21	7 12 18	30	83				PP = 1.875			
16.42	54				S22	12 50/6"	50/6"	83							
	55														

(continued)

Department of Transportation
Division of Engineering Services
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REPORT TITLE				HOLE ID
BORING RECORD				BTNB-R4-PZ
DIST.	COUNTY	ROUTE	POSTMILE	EA
4	S.F.	101	8.3/9.4	163701
PROJECT OR BRIDGE NAME				
Doyle Drive Replacement Project				
BRIDGE NUMBER	PREPARED BY		DATE	SHEET
34-0161R	T. Carroll		11-3-08	2 of 5

CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS_11-2-08.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 11/3/08

Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	55		METAMORPHIC ROCK (SERPENTINITE), greenish gray, very intensely weathered, soft, very intensely fractured (Lean CLAY with SAND (CL), very stiff, moist).		C23			48	0						HQ-3 syntek bit
14.42	56		54.5', grades moderately strong and moderately weathered.												
	57		METAMORPHIC ROCK (SERPENTINITE), dark greenish gray, moderately weathered, gabbroic recovery is broken with largest core length 0.2'.												
12.42	58				C24			27	0						
	59		Greenish gray non-gabbroic, pervasively sheared, slightly weathered to fresh, soft.		C25			90	0						59', switch to diamond bit
10.42	60									16.5	139.4	UU = 0.36			
	61		61.5', reddish brown slightly oxidized zone.												
8.42	62				C26			56	N/A						
	63														
6.42	64														
	65														
4.42	66		Recovery is dark gray gabbroic blocks only.		C27			40	0						
	67														
2.42	68														
	69		68.5', green and dark gray, moderately fractured, moderately soft. Break at 68.95' is mechanical.		C28			100	46						
0.42	70		69.0' - 70.5', surface of core is slightly pitted.												
	71		70.5', 0.15' thick diagonal white mineral vein, moderate iron-oxide staining on fracture surfaces at 69.4' and 70.6'. 71.0' - 71.5', light green mineral vein infilling (chlorite?).		C29			100	0						
-1.58	72		71.6', white minearl vein (0.08' thick) with fibrous texture. 72.1', white mineral vein (0.08' thick).												
	73		73.0', green and greenish gray, very soft, slightly weathered.												Increase in drill rate at 73.4', stopped run at 74'
-3.58	74		74.0', surface pitted.		C30			94	0						
	75		75.0', very soft.												
-5.58	76														
	77		Dark purple blocks of harder serpentinite (gabbroic) at 76.5', 77.5', and 77.0' (each 0.2' thick).												
-7.58	78														
	79		78.5' - 78.8', dark purple block of harder serpentinite (gabbroic).		C31			73	N/A						
-9.58	80														
	81		80.5', 0.3' block of greenish gray harder serpentinite (grabbroic).												
-11.58	82														
	83		82.5' - 83.3', dark greenish gray, intensely fractured, moderately hard, moderately strong, slightly weathered. 83.3', light greenish gray, very soft to soft.		C32			81	0						
-13.58	84														
	85		84.3' - 84.7', harder blocks.												

(continued)

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34-0161R	T. Carroll		11-3-08	3 of 5

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Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	85		METAMORPHIC ROCK (SERPENTINITE), dark greenish gray, moderately weathered, gabbroic recovery is broken with largest core length 0.2'.												
-15.58	86				C33			100	N/A						
	87														
-17.58	88									16.8	138.5	UU = 0.42			Lost circulation at 88' to 88.5'
	89				C34			100	N/A						
-19.58	90				C35			67	N/A						
	91		90.5', iron-oxide staining.												
-21.58	92		91.5', diagonal white secondary mineral vein filliing.												
	93														
-23.58	94		94.0', soft, secondary white mineral disceminated throughout.		C36			78	11						
	95														
-25.58	96		95.8' - 97.0', dark greenish gray, moderately hard, intensely to moderately fractured (no secondary, not internally sheared), fibrous mineralization noted along fractures.												
	97														
-27.58	98														
	99				C37			64	N/A						
-29.58	100														
	101														
-31.58	102														
	103				C38			100	N/A						
-33.58	104														
	105		104.7' - 105.6' and 107.0' - 108.0', recovery is broken, moderately hard, dark gray and green gabbroic serpentinite up to 2.5" in length.		C39			78	N/A						
-35.58	106		105.0' - 105.4', recovery is only loose, moderately strong, moderately hard, fresh blocks of dark gray and green serpentinite up to 1" in length.												
	107				C40			50							
-37.58	108				C41			75	70						
	109														Harder drilling 115' - 116' Harder drilling 123' - 124'
-39.58	110														Straight drill to 124'
	111														
-41.58	112														
	113														
-43.58	114														
	115														

(continued)

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Figure

ELEVATION (ft)	DEPTH (ft)	Material Graphics	Description	Sample Location	Sample Number	Blows per 6 In	Blows per Foot	Recovery (%)	RQD (%)	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Drilling Method	Casing Depth	Remarks
	115		METAMORPHIC ROCK (SERPENTINITE), dark greenish gray, moderately weathered, gabbroic recovery is broken with largest core length 0.2'.												
-45.58	116														
	117														
-47.58	118														
	119														
-49.58	120														
	121														
-51.58	122														
	123														
-53.58	124		Borehole terminated at a depth of 124 feet on 2/19/2008.												
	125		See Boring Record Legend for soil classification chart and key to test data and sampler type.												
-55.58	126														
	127														
-57.58	128														
	129														
-59.58	130														
	131														
-61.58	132														
	133														
-63.58	134														
	135														
-65.58	136														
	137														
-67.58	138														
	139														
-69.58	140														
	141														
-71.58	142														
	143														
-73.58	144														
	145														

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CALTRANS FORMAT DOYLEDRIVE_ARUPLOGS_11-2-08.GPJ ARUP LIBRARY_CALTRANS FORMAT.GLB 11/3/08

Figure